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(54) TRANSACTION APPARATUS

EINRICHTUNG ZUR ABWICKLUNG EINES GESCHÄFTSVORGANGS

SYSTEME D'EXPLOITATION D'AUTOMATE

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Description

The present invention relates to transaction apparatus comprising a number of fuel dispensing locations each having a raster-scannable display for displaying information relating to a transaction.

Fuel dispensers have evolved from having mechanical dial readouts to LED displays to more recent liquid crystal displays. Further developments, such as those incorporated in **THE ADVANTAGE**™ line of fuel dispensers marketed by Gilbarco Inc., include card readers to enable credit cards to be read by the dispenser, with communications back to the credit card issuer to ascertain if the credit card is valid. However, some customers have difficulty using the technology because of lack of familiarity with the procedures required. Accordingly, it would be helpful to users of that sort to have as much customized assistance to direct them in the use of the self-service dispenser. Also, the option of being able to advertise additional products or services for sale would be desirable to the service station operator.

International application WO 89/00974 discloses a system where a transaction module adjacent a fuel dispensing point comprises a CRT display on which both graphics information regarding transaction details, such as the amount of fuel dispensed, are displayed along with video prompts to the user from a video in the transaction module. This assists in improving communications with a user but is expensive requiring a video source in the form of a laser disc player to be associated with each fuel dispensing point.

According to the present invention there is provided transaction apparatus comprising a video signal source and a plurality of fuel dispensing locations each location comprising: a raster-scanned display; a graphics circuit for generating a graphics signal; and circuit means for selectively directing graphics signals concerning transactions or video signals from a video signal source or a combination of them to the raster-scanned display, wherein the video signal source is common to all the dispensing locations.

The present invention permits a customer performing a transaction to be prompted by graphics on the display through various steps of the transaction process. In addition it enables advertising material or other information to be provided by means of video on the display. It is particularly advantageous therefore for the circuit means to monitor the transaction and control the information on the display in dependence upon the stage of the transaction.

This invention can be applied to a CRT (cathode ray tube) device, a LCD (liquid crystal display) device, a gas plasma device, or any other device that is capable of displaying television type video. These are referred to generally herein as raster-scannable displays. An LCD colour display is preferred. Television type video can include conventional CGA, EGA, and VGA video type sources. In such display media, there are three methods which are commonly used to transport video and graphics signals from a generating source to the display media, these being: RGB video, S-video, and Composite video. All three of these methods perform the same functions with the difference being the ease of signal handling for Composite video, high display resolution for RGB, and both ease and high resolution for S-video. The present invention is independent of these three transmission methods with the acknowledgement that conventional circuits can be used to alter one of the transmission methods to any of the other two.

All three of the described video signal methods utilize the same basic timing constituents to format display information for the display device.

Conventional methods of attempting to incorporate video and graphics information involve the conversion of the television video into digital data which is then mathematically added to a digital graphical display format. This method is very expensive because of the processing that has to be accomplished in the space time relationship of the video signal. Also, digitizing television type video is cumbersome and the amount of memory required to store the digital images is expensive. For example, to represent a digital image of quality comparable to the original analogue image would require a minimum of 13 million bits of computer storage. And, all 13 million bits need to be manipulated every 16 milliseconds. This represents very high costs for fast memories and hybrid digital converters. It is therefore preferable that analogue video signals are directed to the display overcoming these problems, and advantageously this is achieved by the circuit means using the synchronization signals to establish graphics information signals synchronized with the video signals.

The present invention has advantages over prior displays which displayed only single line instructions or information to a customer. Instead, instructions are given in a video format, with which there is widespread familiarity, rather than a display using technologies such as LED's. Customer ease-of-use is enhanced, not to mention the very much increased versatility of the types of displays capable on a raster-scannable display. Even for simple word messages, fonts can be customized, logos can be included, and the like.

In one embodiment the transaction apparatus further comprises a card reader for cards having magnetic stripes or other card forms such as smart cards, and the circuit means has a first communication link to an external card-verifying authority.

The invention is particularly advantageous where the transaction apparatus comprises a fuel dispenser, enabling advertising material to be communicated whilst the customer is performing the fuelling operation. Such advertising material may be of a general nature or may relate to a product or service available at the service station. It is particularly advantageous if means is provided for a customer of the transaction apparatus to authorize an additional transaction, the nature of the trans-

action being dependent upon the stage of the main transaction and the information on the display. This enables the additional transaction (such as purchase of carwash token) to be made on impulse and added to the main transaction.

Preferably the circuit means also comprises a beginning-of-program detector for the video signals, thereby directing video signals to the raster-scannable display only at detected program beginnings, wherein the circuit means is capable of selectively directing graphics information or video signals or a combination of them to the raster-scannable display. The beginning-of-program detector may detect a black level in a visual signal portion of the video signals, or a cue in the audio portion or in a synchronization signal. Also in a preferred embodiment, the circuit means determines the placement of graphics information concerning transactions on the raster-scannable display with video information.

One embodiment of the invention will now be described by way of example only with reference to the accompanying drawings of which:

Figure 1 is a block diagram of a service station illustrating major components of a preferred embodiment according to the present invention as linked together;
Figure 2 is an elevational view of a fuel dispenser of Figure 1, partially broken away;
Figure 3 is a block diagram of various components of the electronics used in a dispenser according to a preferred embodiment;
Figure 4 is a functional diagram of various components of the electronics of the video/graphic mixer; and
Figure 5 is a block diagram of one of the components depicted in Figure 4; and
Figure 6 is a block diagram of another of the components depicted in Figure 4;
Figure 7 and 8 are block diagrams of two alternate embodiments of one of the components depicted in Figure 6; and
Figure 9 is a schematic rendering of the relative positions of images to be displayed on a raster-scannable display of two signals to be displayed.

As seen in Figure 1, a service station 10 has on site a plurality of fuel dispensers 12 connected through a single distribution box 14 to a site controller 16. The site controller 16 is preferably the G-Site system controller sold by Gilbarco, Inc. of Greensboro, North Carolina. The controller 16 serves as an overall system controller for the multiplicity of fuel dispensers 12. It has a link to a remote credit- or debit- card-validating computer 18, such as a telephone link. The computer 18 may be hundreds or thousands of miles away from the service station, at the site of a card-issuing authority or the like.

The relationships of the dispensers 12, distribution box 14, controller 16, and computer 18 are conventional as regards the card-validating function. The controller 16 serves as a point-of-sale device somewhat like a cash register manned by an attendant, typically located in a kiosk or other store facility.

Each of the dispensers 12 is supplied with a video signal from a video source 135 through a distribution amplifier 20. It should be appreciated that each of the dispensers 12 is supplied with exactly the same signal, decreasing the investment required in video sources 135. The source may be any conventional source of video signals such as a video tape recorder, a video disk, a live camera, an over-the-air or over-cable reception, or the like.

Turning now to Figure 2 which shows an elevational view of one of the dispensers 12, the dispenser includes a conventional nozzle 36 connected through a hose 34 to the dispenser housing, for dispensing gasoline or other fuel in a conventional fashion. The fuel is supplied from an underground reservoir through a conduit 28 to the hose 34. A metering device 30 from the conduit 28 ascertains the volume of fuel delivered through the conduit 28 and communicates that data over a line 32 to transaction computer 40 in the dispenser 12. The volume is used to compute and display the transaction data on conventional transaction display 38.

The dispenser also includes a magnetic stripe card reader 22, a cash acceptor 24, and a receipt printer 26, all of any desired design. The transactions in which the components 22, 24, 26 are involved are computed and ascertained by the metering device 30 which also calculates and displays the transaction display 38. The metering device 30 outputs signals to a transaction computer 40 as is conventional in products such as the Gilbarco line of CRIND (Card Reader IN Dispenser) dispensers sold under the trademark **THE ADVANTAGE™**. The transaction computer 40 outputs graphic/video command and control data over line 115, as shown in Figure 3, and is programmed with desired placement of a selection of messages on a video screen.

Referring back to Figure 2, a video screen 125 can be seen displaying information concerning a carwash transaction which can be elected by a customer in combination with a fuelling transaction. Associated with the video display 125 is a keypad 130 similar to those conventionally used with bank automated teller machine displays. That is, a plurality of keys 130 are aligned with the raster-scannable display 125 so that the effect of pressing one or more of the keys 130 is explained to a user by the display on the screen 125. Other keypads 130 on other sides of the display 125 may be provided, or the one keypad may be located on another side. Additional keypads 42, 44 are provided for further transaction entry data to the control computer 40, in convention fashion. If desired, the apparatus could be configured for data input through a touch screen.

Figure 3 illustrates the basic components of a preferred embodiment of the invention. Much of this system

can be reconfigured, and it is the purpose of the figure to illustrate but one example of the individual component functions. The television video source 135 is representative of one of any number of television compatible sources (i.e., VCR's, video disks live cameras, cable and radio transmission, etc.). The source is not important as long as video signal timing is used. A particularly significant advantage of the present invention is that the video signal can be handled totally in analogue form, avoiding the expense of digitization. Component 150 is a scan rate converter which converts standard RS170 video levels and timing to the higher speed of high resolution data display systems such as EGA and VGA computer video interfaces. Component 150 is an optional component and is not needed when the computer graphics video timing can be made to operate at the standard RS170 levels and timing for television video.

Component 100 is representative of any number of graphic generation sources which output video in RGB, Composite or S-Video. Component 110 implements the synchronization between the graphics source 100 and the video source 135. Component 125 is any display media that is capable of displaying a raster scan image format. Two examples are liquid crystal displays and cathode ray tubes. Control input 130 may or may not be provided to the user to provide for input to the control system 40 which drives the display system through cable 115. Component 130 could be a button interface or a conventional touch screen interface which would allow the user to select information on the screen in response to the control functions of the computer driving the graphic/video system.

Transaction computer 40 connected at 115 sends graphic control information to the graphic generator system 100. This information can be any information that is normally expressed to the operator or user of a piece of equipment that would normally be represented on a graphic, single line or multi-line display. In a Gilbarco CRIND product, this control display information is processed by the generic function of block 100 and sent to a single line media display. In the invention, this formatted graphic information is routed to the video mixing system which provides several functions that allow the normal single media graphic display information to be formatted with video information from a variety of television type video sources in order to be displayed together.

The invention utilizes the horizontal and vertical timing of the external television video to construct a compatible timing framework for the graphic video signals to be combined with the video. This is based on the premise that one of the sources, either the graphic or the video, must be controllable in regard to the generation of the synchronization information. Since the television type video has fixed synchronization information, the computer graphic generator is synchronized with the video signal.

The video mixing system 110 provides information through cable 105 back to the graphic generator 100 which allows synchronization to be established. In order to do this, the video mixing system 110 extracts the horizontal and vertical timing indicators from the external television type video cable 145 and creates from these indicators a master clock frequency which the graphic generator 100 uses to create graphic information for the media display 125. Since this enables the base timing of the graphic generator to be derived from the external television type video by the video mixing device, the timing between the graphics and the external video will be synchronized and mixing can occur within the established timing framework.

Figure 4 illustrates the basic function blocks found in a preferred embodiment. There are eight functions shown for the synchronization and mixing function, although some of them may not be needed, depending on what kind of video (RGB, Composite, or S-Video) is being mixed.

Block 205 is a tuner block which extracts the video signal if it has been modulated onto a radio frequency carrier. Modulation is usually done to preserve the quality and aid in the transmission of cable TV type signals. If the external video is not modulated onto a carrier, then block 205 is not needed.

Block 215 is a conventional device that has several common implementations. Its function is to separate the synchronization signals if the video signals of line 210 are composite or S-video signals. It outputs the vertical synchronization signals on line 220 and the horizontal on line 225. If RGB video is input on line 210, then synchronization information is sent with the signal by convention and the sync separation process is not needed. For composite and S-video signals, the sync separator extracts the horizontal and vertical synchronization indicators for use in the mixing process.

Block 230 is a conventional video standard converter designed to operate in whatever of the three modes best suits the external and graphics video for mixing. If the external video was composite and the computer graphics video of block 100 was in RGB, then the converter block 230 would be a conventional circuit to decode the external television type signal into RGB for mixing. Block 230 may also be designed to convert any one of the other three aforementioned video formats into any of the others (i.e., RGB into Composite, Composite to S-Video, S-Video to RGB, etc.). If the external video and the graphics video are of a compatible type suitable for mixing, then block 230 is not needed.

Block 270 uses the synchronization information from block 215 to create a compatible timing framework for the mixing process. Block 270 uses a conventional principle called phase locking in order to establish the unique timing relationship needed to conduct the video/graphics mixing process. The structure and process of block 270 may be analogous to that described in U.S. Patents 4,631,588 to Barnes et al. or 4,498,098 to Stell. The disclosures of those patents are hereby incorporated by reference. The output of block 270 provides a sta-

ble master dot (or pixel) clock signal 280 which the graphic generator 100 uses to create the graphic images to be mixed with the external video. The graphic generator 100 uses the dot clock signal on line 280 to generate a horizontal synchronization indicator 275 which is sent back to block 270 to be used in the phase lock process. It is this re-derivation of the horizontal synchronization 275 from the dot clock signal 280 which aligns the external and graphic video so that the mixing process is possible.

Block 290 further aligns the synchronization process defined by block 270 by coordinating the vertical synchronization of the external television type video and the graphics video. This process is simple once the horizontal synchronization has been established. The vertical synchronization process uses the derived dot clock signal 280 to measure the number of clock cycles difference which may exist between the external video synchronization signal 220 and a vertical synchronization indicator 300 generated by the graphic generator. Note that the vertical synchronization indicator 300 for the graphic generator 100 is derived from the dot clock signal 280 in much the same way as the graphic horizontal signal 275. When a defined number of dot clock cycles of time difference exists between the external video vertical synchronization indicator 220 and the graphic generator vertical synchronization indicator 300, block 290 sends a synchronization signal over line 295 to the graphic generator 100 to tell it to realign the generation of the vertical synchronization indicator 300.

Block 255 determines which areas of the display media receive which signals by a timing function that interfaces with the derived dot clock 280 and the horizontal indicator 225. The derived dot clock 280 and the horizontal indicator 225 are logically combined to create a space time signal that is representative of an area of the display media.

Figure 6 shows the main functions of the windowing circuit 255. Signals 235 and 310 are provided to blocks 404 and 406 which strip timing information from the video signals. Alternatively, the stripped signals from separator 215 and the computer signal 310 may be used. Block 416 provides the windowing function of signals 400 and 402 utilizing the horizontal sync signal and the vertical sync signal 410.

Block 416 can provide the windowing function in one of two ways, both of which create a space-timing relationship with the video signals. The first method utilizes the master clock signal 280 used to operate the graphic generator source. In the embodiment of Figure 7, timing block 416 utilizes the graphic clock signals to count down the horizontal time duration 436 of the developed window as shown in Figure 9. The clock signal 280 is routed into conventional counters 426 which control either the horizontal time on 422 or the horizontal time off 424. The vertical area 433 of the window 438 is accomplished by routing the horizontal sync pulses into counter 428 which controls with the vertical time on 430 or the vertical time off 432. Signals 422, 424, 430, 432 are logically combined in block 434 to provide a signal 265 which indicates when the video window is active based on the loaded counts into counter blocks 426 and 428 from logic control bus 260 provided by computer 40. Control line 250 is provided for the circuit to be disabled by block 248 when video is not present. Vertical sync 210 is used to reset the counters 426 and 428 after each video frame in order to establish a new window 438.

The second method utilizes analogue timing components to effect the timing to develop the window. In the embodiment of Figure 8, timing block 416 utilizes a conventional "one shot" type circuit to develop the horizontal time duration 436 of the window as shown in Figure 9. The horizontal sync pulses are routed to active the one shot block 427, which develops the time duration for the horizontal time on 422 or the horizontal time off 432. Signals 422, 424, 430, 432 are logically combined in block 434 to provide a signal 265 which indicates when the video window is active based on the time constants of one shot blocks 427 and 429 from logic control bus 260. Control line 250 is provided for the circuit to be disabled by block 248 when video is not present.

A window enable signal 265 produced by block 255 indicates that external video 235 is being mixed with the graphic video 310. Signal 265 operates on block 305 which contains conventional analogue signal multiplexers which provide the straight overlay process or mixing process. This is to say that signal 265 logically places either the graphics 310 or the external video on separate portions of the display media screen, or allow an analogue mixing of the graphic 310 and external video 235 in a portion of the screen.

Block 240 is responsible for the continuous sequencing of external video material. Block 240 is intended to function with external video that has been created to repeat in a continuous loop and allows the user of the system to view the start of a video segment placed on the VCR tape or laser disc source.

Block 240 is especially useful in a video environment where multiple devices are trying to use a single video source. It provides a means independent of the media for detecting the breaks between the source program material.

Block 240 explicitly addresses external video that has been created to repeat in a continuous loop or simply runs continuously and does not repeat, like television programming. Block 240 allows the user of a system which utilizes external video information to view the start of a video segment from an external source which could be a VCR tape, laser disc source, or normal television programming. The program detector 240 allows the user to queue and use a desired video segment on a continuous format in its entirety without starting in the middle of the segment.

Figure 5 illustrates in block form the operation of the program detector 240. Four conventional components

combine to comprise the program detect function: a video signal integrator 232, an integration timer 236, a threshold detector 248 and a logical discriminator 258.

Block 232 performs a common voltage or current integration function. It integrates (or adds up over time) the actions of the video signal 210 to provide an output signal 254 which is indicative of the accumulated video signal over time. The function of integration is conventional and can be implemented with a number of common technologies.

Block 236 is an integration timer which controls the period over which the video signal 210 is accumulated. This timing function is commonly known in the art as an integration period and is fundamental mathematically for performing the integration process in block 232. The timing function of block 236 can be implemented with the timing of the video signals 220 and/or 225 with counters, or with an external clock with counters, or with an analogue timing function. When the period of integration is determined by clock 236, then a signal 244 is sent to the video signal integrator 232 to reset the accumulated level so that a new level can be accumulated.

Block 248 is a conventional threshold comparator. Signal 252 applied to block 248 is a voltage threshold level which is indicative of the minimum amount of video signal level 210 that would be apparent over the video integration timer period 236 and is comparable to a black video level. A black video level is indicative of a video signal with no video program present. This signal 252 is at a level equal to the accumulation of this known black level over time and is compared with the accumulation level 254. The comparator 248 can thus indicate that the incoming video signal 210 has no active video present.

The result of the comparison of the accumulated video level 254 to the known accumulation of a black level 252 over the time dictated by timer 236 is sent to the logical discriminator 258. Block 258 in Figure 2 is implemented with a conventional AND function, but could be constructed with any logical construct that performs the function in coordination with block 255. The logical function simply combines the indication of the end of the integration period 246 with the comparison result 248 to provide a logical output 262 to device 255 to indicate that a program end/beginning has occurred. This indication can then be used by the window boundary circuit 255 to enable the passage of the video signal through block 305 if the computer has signalled for video program on line 260.

Referring again to Figure 3, the operation of the system begins when the command/control computer 40 attached to the graphic generator 100 through cable 115 instructs the graphic generator 100 to format and display graphic data to the user on display media 125. The graphic generator 100 has control of the video mixer 110 through cable 105 and can instruct the video mixer 110 with signals 260 to allow the graphic data 310 to be displayed to the user without external video mixing. Alternatively, it can instruct that video signals be displayed or a combination of the two in respective video screen portions. As a result of the graphic data 310 being placed on the display media 125 the user may or may not input requests to the control system through input 130. For example, in the display of Figure 2, the user may select a carwash option through the use of one or more of the inputs 130. In either case, the command/control computer can request through cable 115 that the graphic generator 100 display graphics 310 and external video 235 simultaneously on display media 125. The control commands sent through cable 115 set up the size of the window with signals 260 into block 255. If the program detector 240 is implemented, then 240 will search the incoming video 210 for a gap between messages before allowing the mixing window to appear on the display media 125.

The invention is specifically designed to be used in conjunction with the inventions described in applications WO/9409458, entitled "An Apparatus and Method for Displaying Video Information" of Hans Atchley, and WO/9409593 entitled "Apparatus and Method for Encoding/Recovering Multi-media Control Signals in an AudioNideo Program" of Joseph Daniel Long, both filed on even date herewith. The disclosures of those two applications are hereby incorporated herein by reference.

Those of ordinary skill in the art will recognize that the invention as disclosed herein may be implemented in numerous embodiments which differ from the specific disclosure hereof. All such embodiments which fall within the scope of the appended claims are deemed to be within the scope of the patent.

Claims

1. Transaction apparatus comprising a video signal source (135) and a plurality of fuel dispensing locations (12) each location (12) comprising: a raster-scanned display (125); a graphics circuit (100) for generating a graphics signal; and circuit means (110) for selectively directing graphics signals concerning transactions or video signals from a video signal source or a combination of them to the raster-scanned display (125), characterised in that the video signal source (135) is common to all the dispensing locations (12).

2. Apparatus as claimed in claim 1 wherein the video signals are analogue signals as directed to the raster-scanned display.

3. Apparatus as claimed in claim 1 or 2 wherein the circuit means monitors the transaction and controls the information on the display in dependence upon the stage of the transaction.

4. Apparatus as claimed in claim 1, 2 or 3 further com-

prising a user-actuable portion (42) to permit responses to be communicated to the circuit means.

5. Apparatus as claimed in claim 4 wherein the user-actuable portion (42) enables a customer to authorize an additional transaction, the nature of the transaction being dependent upon the stage of the main transaction and the information on the display.

6. Apparatus as claimed in any preceding claim further comprising a card reader, wherein the circuit means has a first communication link to an external card-verifying authority.

7. Apparatus as claimed in any preceding claim wherein the circuit means includes a beginning-of-program detector for the video signals and starts directing video signals to the raster-scanned display only at detected program beginnings.

8. Apparatus as claimed in any preceding claim wherein the circuit means selectively directs graphics signals concerning transactions or video signals or a combination of them to the raster-scanned display, in dependence on the stage of the transaction.

9. Apparatus as claimed in any preceding claim wherein the circuit means uses synchronization signals in the video signals to establish graphics signals synchronized with the video signals.

10. Apparatus as claimed in any preceding claim wherein the circuit means determines the relative placement of graphics information concerning transactions on the raster-scanned display with video information.

11. Apparatus as claimed in any preceding claim wherein the raster-scanned display is a liquid crystal display.

12. Apparatus as claimed in any preceding claim wherein the circuit means converts one of the video or graphics signals to be compatible with the other one of the video or graphics signals.

13. Apparatus as claimed in any preceding claim wherein the transaction apparatus comprises a fuel dispenser.

14. Apparatus as claimed in claim 13 wherein the dispenser has a fuel meter communicating data about fuel dispensed to said circuit means.

Patentansprüche

1. Transaktionsvorrichtung mit einer Videosignalquelle (135) und einer Vielzahl von Kraftstoffzapfanlagenstandorten (12), jeder Standort (12) umfassend: eine rasterabgetastete Anzeige (125); einen Graphikschaltkreis (100), um ein Graphiksignal zu erzeugen; und ein Schaltkreismittel (110), um wahlweise Graphiksignale bezüglich Transaktionen oder Videosignale von einer Videosignalquelle oder eine Kombination aus diesen zu der rasterabgetasteten Anzeige (125) zu führen, dadurch gekennzeichnet, daß die Videosignalquelle (135) gemeinsam für alle Zapfanlagenstandorte (12) ist.

2. Vorrichtung nach Anspruch 1, worin die Videosignale analoge Signale sind, wenn sie zu der rasterabgetasteten Anzeige geführt werden.

3. Vorrichtung nach Anspruch 1 oder 2, worin das Schaltkreismittel die Transaktion überwacht und die Information auf der Anzeige in Abhängigkeit von der Stufe der Transaktion steuert.

4. Vorrichtung nach Anspruch 1, 2 oder 3, ferner einen nutzerbetätigbaren Abschnitt (42) umfassend, um eine Übertragung der Antworten zu dem Schaltkreismittel zu ermöglichen.

5. Vorrichtung nach Anspruch 4, worin der nutzerbetätigbare Abschnitt (42) einem Kunden ermöglicht, eine zusätzliche Transaktion zu autorisieren, wobei die Art der Transaktion von der Stufe der Haupttransaktion und der Information auf der Anzeige abhängig ist.

6. Vorrichtung nach einem der vorstehenden Ansprüche, ferner einen Kartenleser umfassend, worin das Schaltkreismittel eine erste Kommunikationsverbindung zu einer externen kartenüberprüfenden Stelle hat.

7. Vorrichtung nach einem der vorstehenden Ansprüche, worin das Schaltkreismittel einen Programmanfangsdetektor für die Videosignale umfaßt und nur bei erkannten Programmanfängen beginnt Videosignale zu der rasterabgetasteten Anzeige zu führen.

8. Vorrichtung nach einem der vorstehenden Ansprüche, worin das Schaltkreismittel wahlweise Graphiksignale bezüglich Transaktionen oder Videosignale oder eine Kombination aus diesen in Abhängigkeit von der Stufe der Transaktion zu der rasterabgetasteten Anzeige führt.

9. Vorrichtung nach einem der vorstehenden Ansprüche, worin das Schaltkreismittel Synchronisationssignale in den Videosignalen verwendet, um Graphiksignale zu schaffen, die mit den Videosignalen synchronisiert sind.

10. Vorrichtung nach einem der vorstehenden Ansprüche, worin das Schaltkreismittel die relative Anordnung der Graphikinformation bezüglich Transaktionen auf der rasterabgetasteten Anzeige mit Videoinformation bestimmt.

11. Vorrichtung nach einem der vorstehenden Ansprüche, worin die rasterabgetastete Anzeige eine Flüssigkristallanzeige ist.

12. Vorrichtung nach einem der vorstehenden Ansprüche, worin das Schaltkreismittel eines der Video- oder Graphiksignale wandelt, damit dieses mit dem anderen der Video- oder Graphiksignale kompatibel ist.

13. Vorrichtung nach einem der vorstehenden Ansprüche, worin die Transaktionsvorrichtung eine Kraftstoffzapfanlage umfaßt.

14. Vorrichtung nach Anspruch 13, worin die Zapfanlage ein Kraftstoffmeßgerät aufweist, das Daten über gezapften Kraftstoff zu dem Schaltkreismittel überträgt.

Revendications

1. Appareil de transaction comprenant une source de signaux vidéo (135) et plusieurs emplacements de distribution de carburant (12), chaque emplacement (12) comprenant :

   un présenteur à balayage tramé (125) ; un circuit graphique (100) pour produire un signal graphique ; et un moyen formant circuit (110) pour diriger, de manière sélective, des signaux graphiques concernant des transactions ou des signaux vidéo d'une source de signaux vidéo ou une combinaison de ceux-ci vers le présenteur à balayage tramé (125), caractérisé en ce que la source de signaux vidéo (135) est commune à tous les emplacements de distribution (12).

2. Appareil selon la revendication 1, dans lequel les signaux vidéo sont des signaux analogiques lorsqu'ils sont dirigés vers le présenteur à balayage tramé.

3. Appareil selon la revendication 1 ou 2, dans lequel le moyen formant circuit pilote la transaction et commande l'information sur le présenteur en fonction de l'étape de la transaction.

4. Appareil selon la revendication 1, 2 ou 3, comprenant en outre une partie pouvant être commandée par l'utilisateur (42) pour permettre de communiquer des réponses au moyen formant circuit.

5. Appareil selon la revendication 4, dans lequel la partie pouvant être commandée par l'utilisateur (42) permet à un client d'autoriser une transaction supplémentaire, la nature de la transaction étant dépendante de l'étape de la transaction principale et de l'information sur le présenteur.

6. Appareil selon l'une quelconque des revendications précédentes, comprenant en outre un lecteur de carte, dans lequel le moyen formant circuit a une première ligne de transmission vers une autorité externe de vérification de carte.

7. Appareil selon l'une quelconque des revendications précédentes, dans lequel le moyen formant circuit comprend un détecteur de début de programme pour les signaux vidéo et démarre en ne dirigeant les signaux vidéo vers le présenteur à balayage tramé que lors de la détection de débuts de programme.

8. Appareil selon l'une quelconque des revendications précédentes, dans lequel le moyen formant circuit dirige, de manière sélective, des signaux graphiques concernant des transactions, ou des signaux vidéo, ou une combinaison de ceux-ci, vers le présenteur à balayage tramé en fonction de l'étape de la transaction.

9. Appareil selon l'une quelconque des revendications précédentes, dans lequel le moyen formant circuit utilise les signaux de synchronisation des signaux vidéo pour établir des signaux graphiques synchronisés avec les signaux vidéo.

10. Appareil selon l'une quelconque des revendications précédentes, dans lequel le moyen formant circuit détermine la place relative, sur le présenteur à balayage tramé avec l'information vidéo, de l'information graphique concernant les transactions.

11. Appareil selon l'une quelconque des revendications précédentes, dans lequel le présenteur à balayage tramé est un présenteur à cristaux liquides.

12. Appareil selon l'une quelconque des revendications précédentes, dans lequel le moyen formant circuit convertit l'un du signal vidéo ou du signal graphique pour qu'il soit compatible avec l'autre du signal vidéo ou du signal graphique.

13. Appareil selon l'une quelconque des revendications précédentes, dans lequel l'appareil de transaction comprend un distributeur de carburant.

14. Appareil selon la revendication 13, dans lequel le distributeur comporte un instrument de mesure de carburant communiquant, audit moyen formant cir-

cuit, des données concernant le carburant délivré.

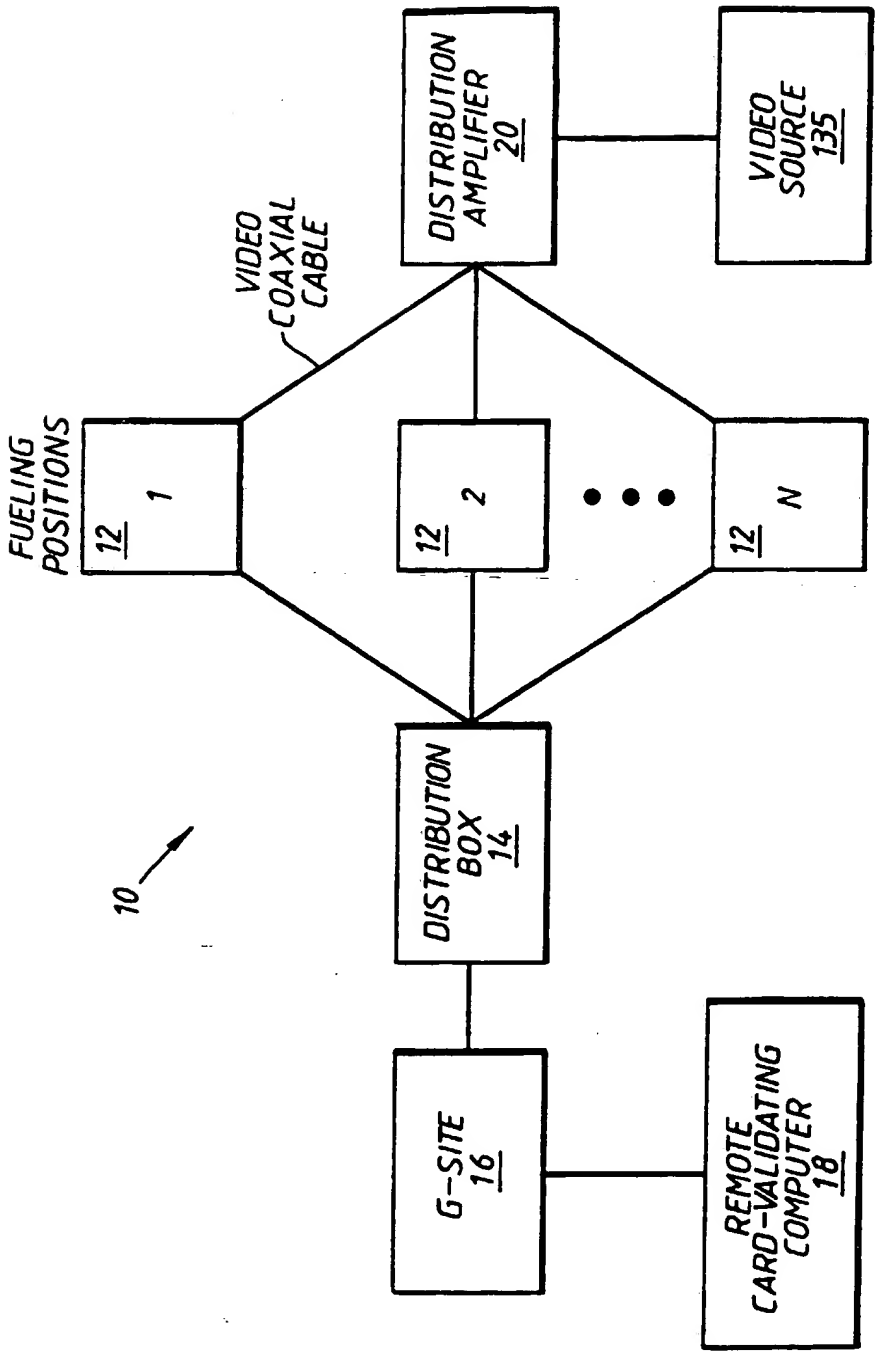
DISTRIBUTION AMPLIFIER 20
VIDEO SOURCE 135
VIDEO COAXIAL CABLE
FUELING POSITIONS
12 1
12 2
12 N
10
DISTRIBUTION BOX 14
G-SITE 16
REMOTE CARD-VALIDATING COMPUTER 18

Fig. 1

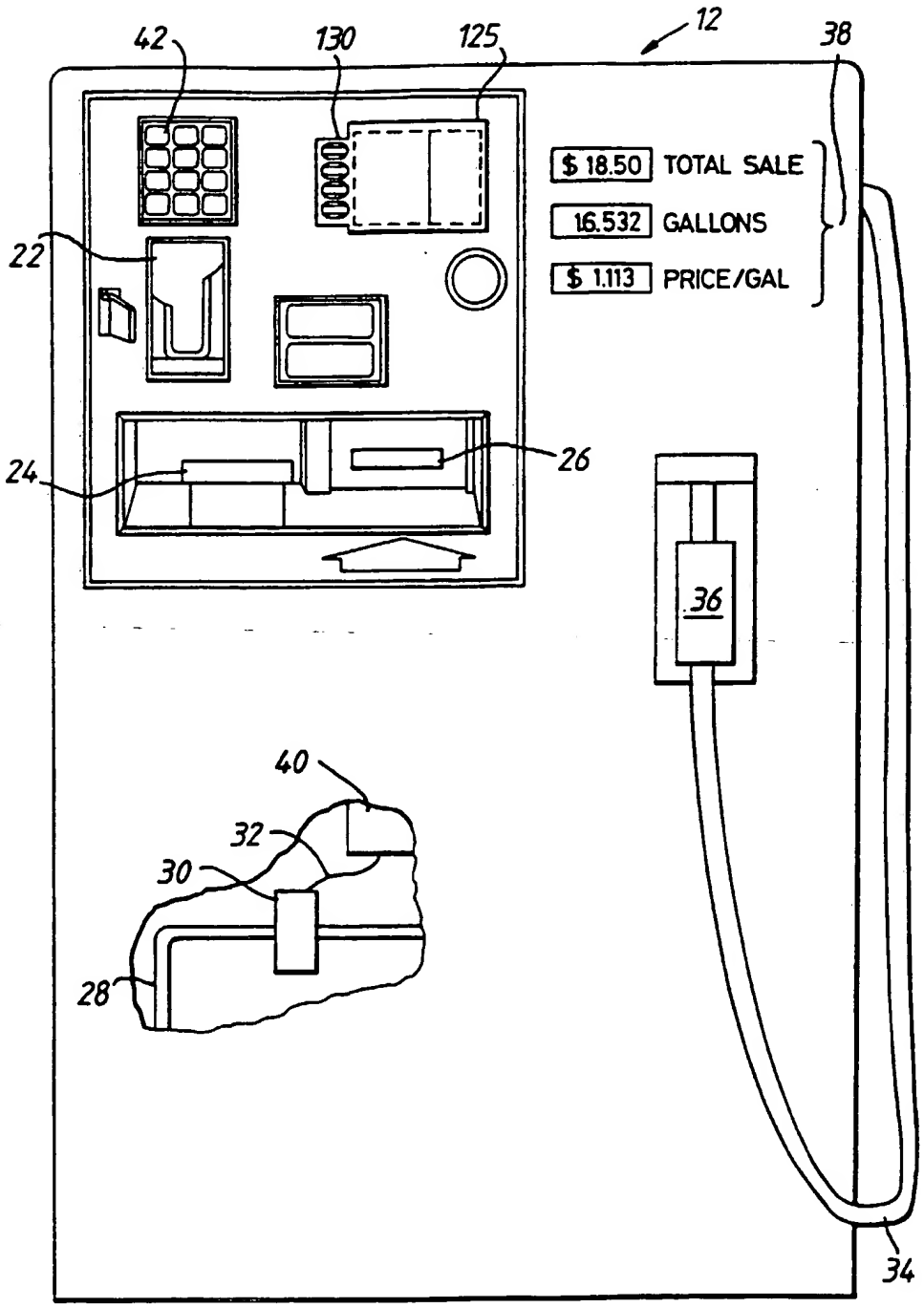
42
130
125
12
38
$ 18.50 TOTAL SALE
16.532 GALLONS
$ 1.113 PRICE/GAL
22
24
26
36
40
32
30
28
34

Fig. 2

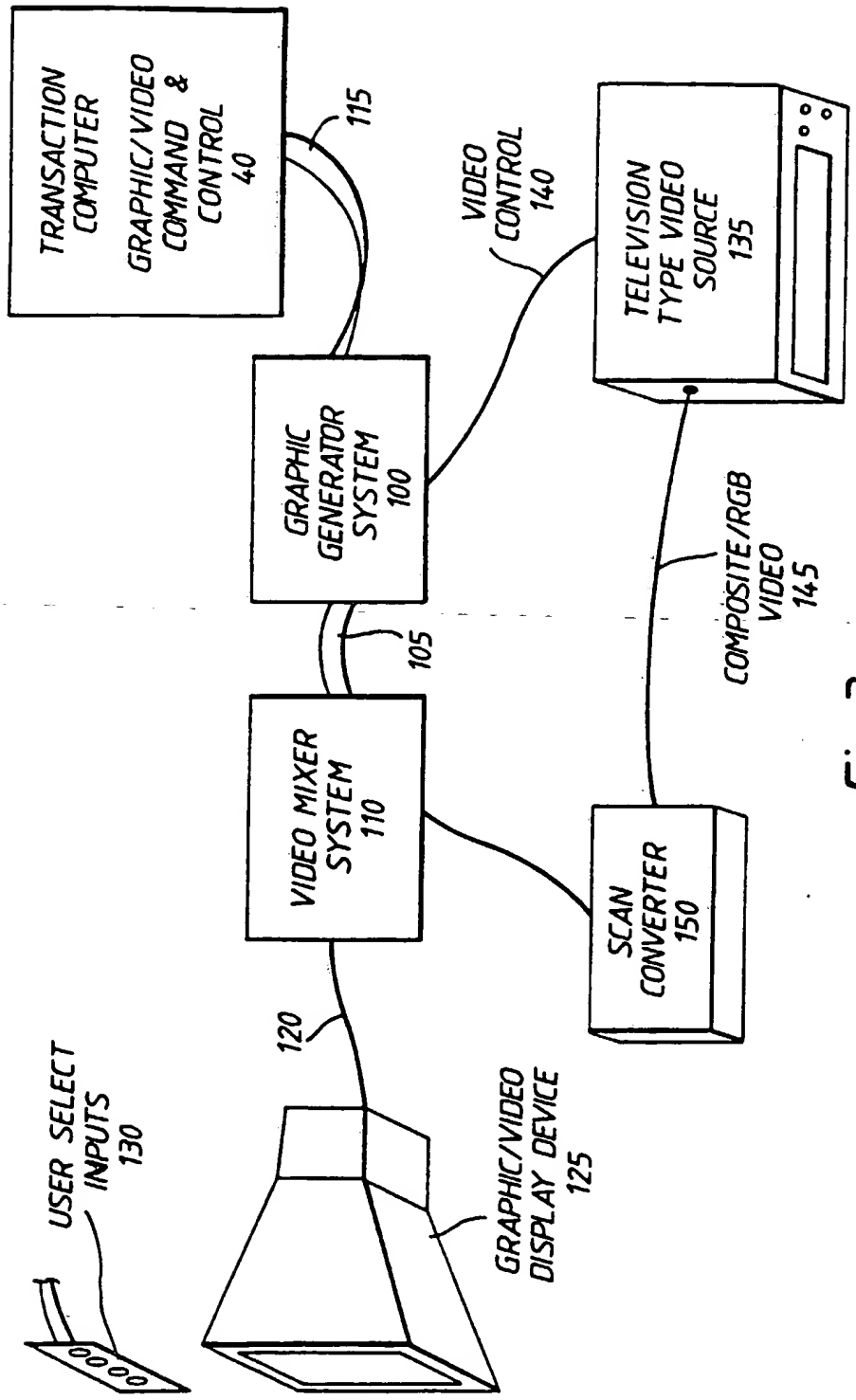
TRANSACTION COMPUTER
GRAPHIC/VIDEO COMMAND & CONTROL 40
115
VIDEO CONTROL 140
TELEVISION TYPE VIDEO SOURCE 135
GRAPHIC GENERATOR SYSTEM 100
105
COMPOSITE/RGB VIDEO 145
VIDEO MIXER SYSTEM 110
SCAN CONVERTER 150
120
USER SELECT INPUTS 130
GRAPHIC/VIDEO DISPLAY DEVICE 125

Fig.3

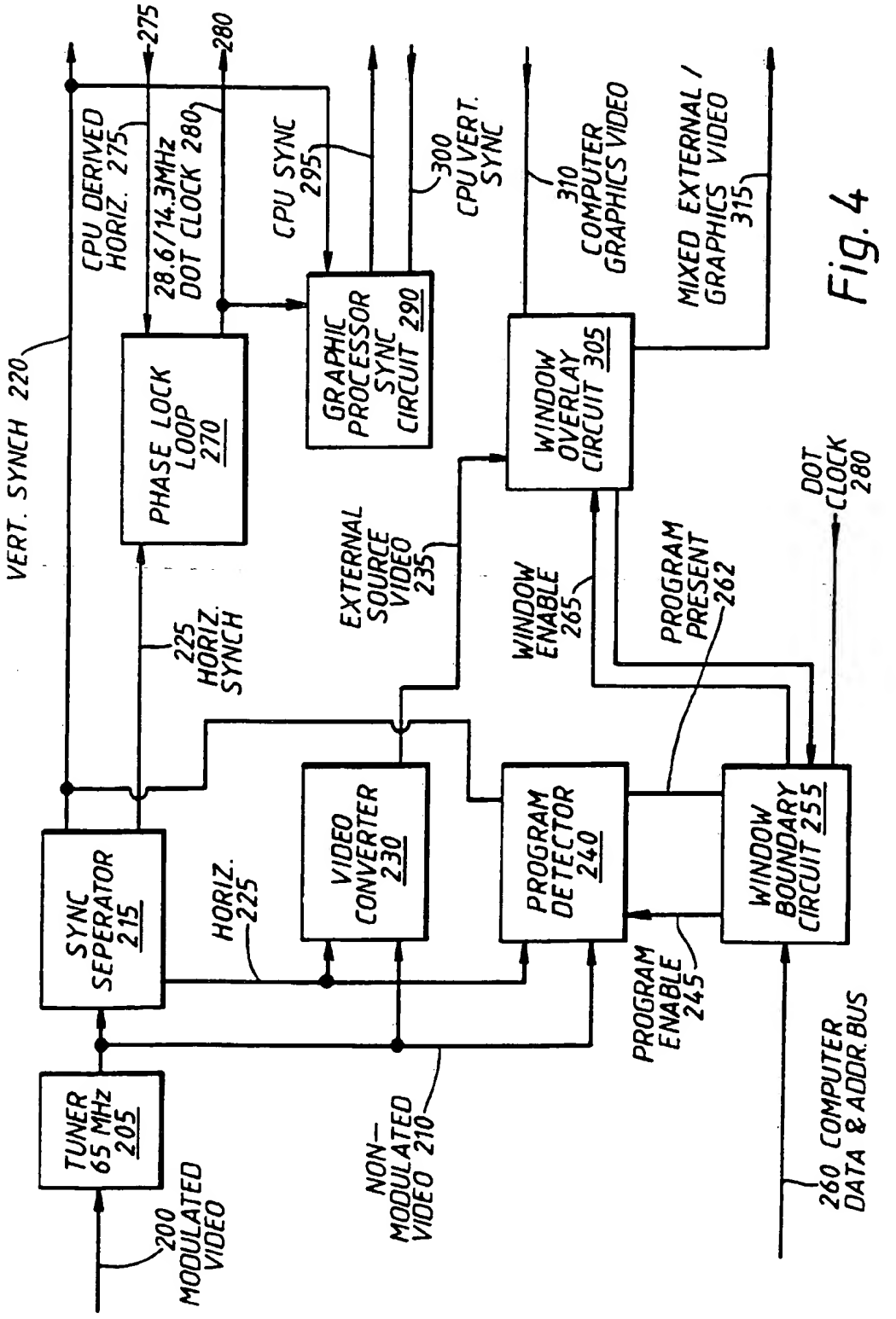
TUNER 65 MHz 205
200 MODULATED VIDEO
SYNC SEPERATOR 215
HORIZ. 225
VIDEO CONVERTER 230
NON-MODULATED VIDEO 210
PROGRAM DETECTOR 240
PROGRAM ENABLE 245
WINDOW BOUNDARY CIRCUIT 255
260 COMPUTER DATA & ADDR. BUS
PHASE LOCK LOOP 270
225 HORIZ. SYNCH
VERT. SYNCH 220
CPU DERIVED HORIZ. 275
28.6/14.3MHz DOT CLOCK 280
GRAPHIC PROCESSOR SYNC CIRCUIT 290
CPU SYNC 295
300 CPU VERT. SYNC
EXTERNAL SOURCE VIDEO 235
WINDOW OVERLAY CIRCUIT 305
310 COMPUTER GRAPHICS VIDEO
MIXED EXTERNAL / GRAPHICS VIDEO 315
WINDOW ENABLE 265
PROGRAM PRESENT 262
DOT CLOCK 280

Fig. 4

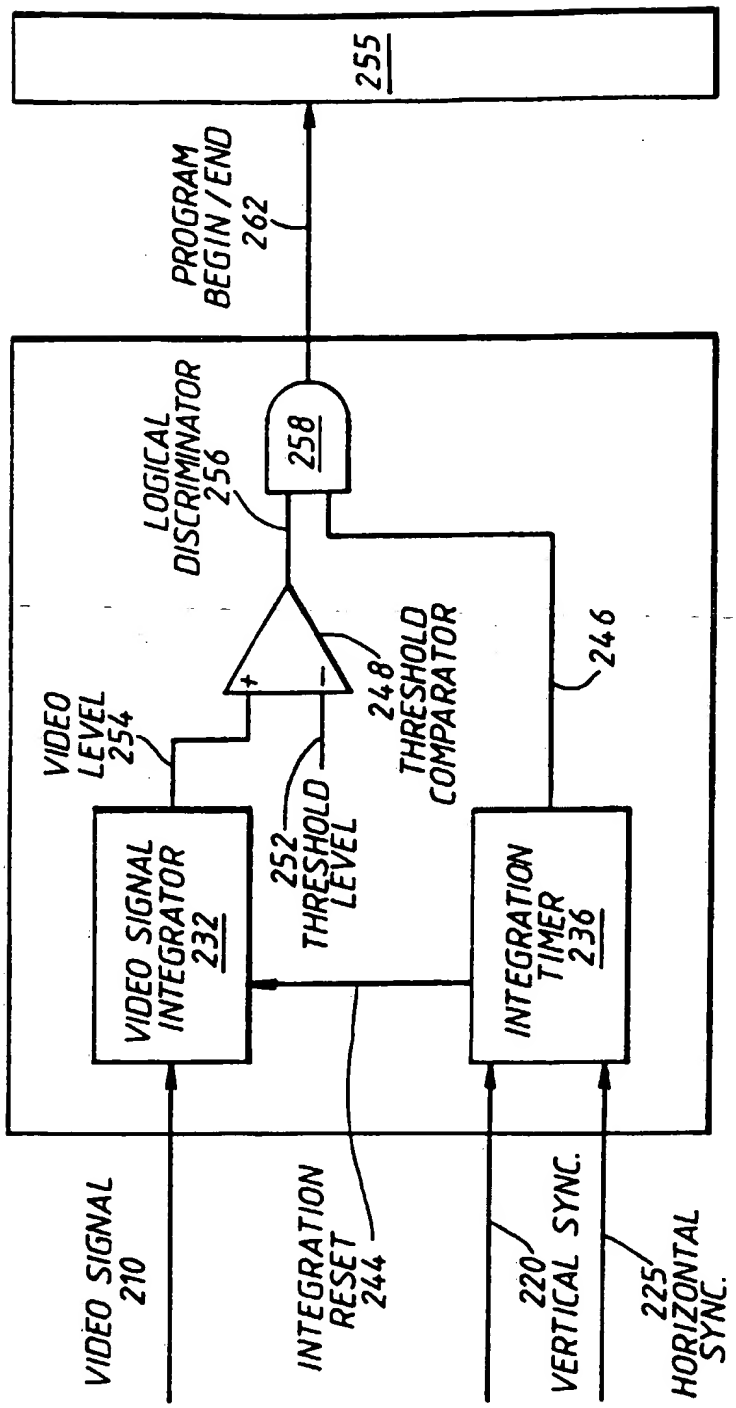
255
PROGRAM BEGIN/END 262
LOGICAL DISCRIMINATOR 256
258
VIDEO LEVEL 254
248 THRESHOLD COMPARATOR
246
252 THRESHOLD LEVEL
VIDEO SIGNAL INTEGRATOR 232
INTEGRATION TIMER 236
VIDEO SIGNAL 210
INTEGRATION RESET 244
220 VERTICAL SYNC.
225 HORIZONTAL SYNC.

Fig. 5

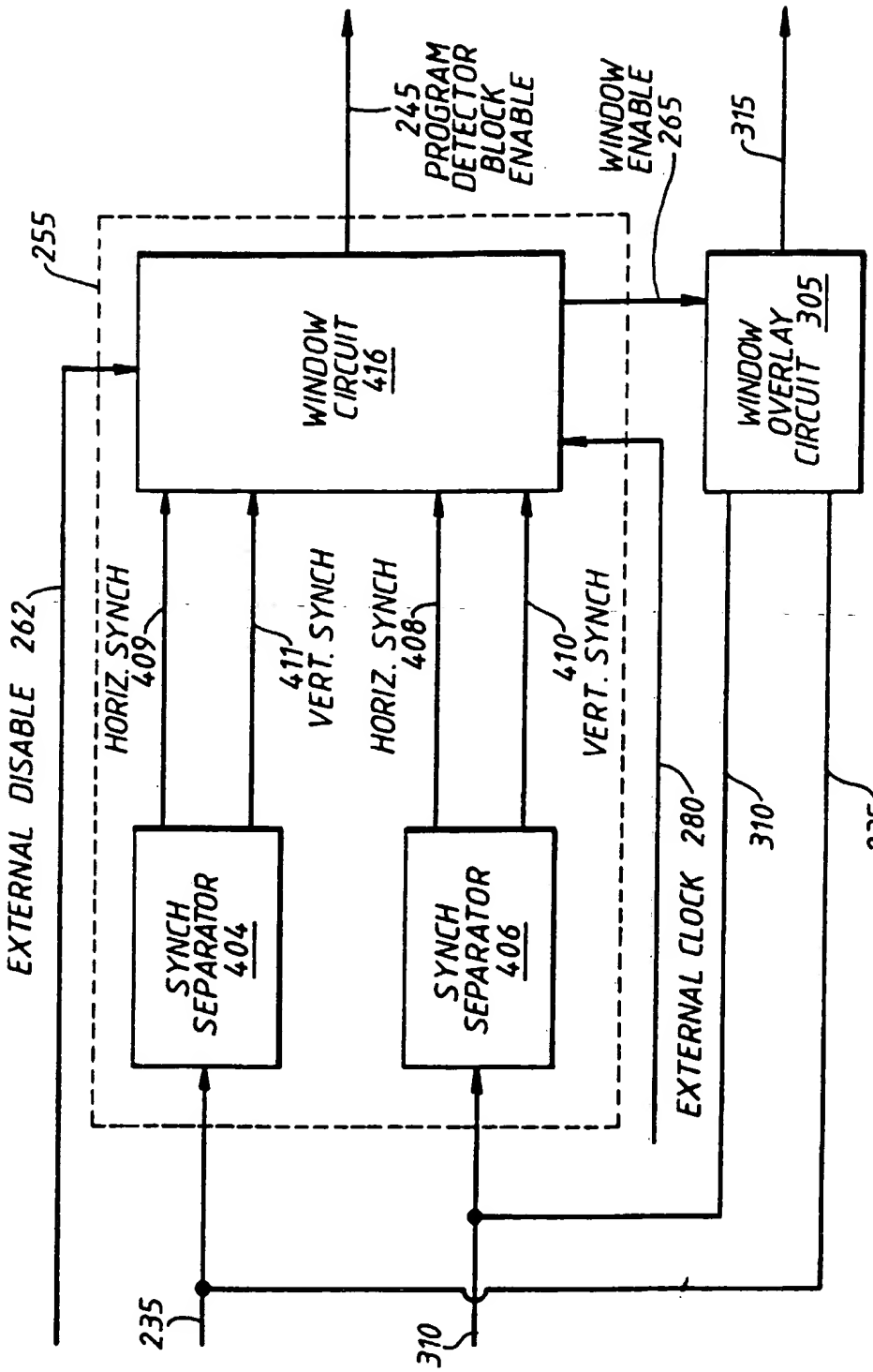
245
PROGRAM
DETECTOR
BLOCK
ENABLE
WINDOW
ENABLE
265
315
255
WINDOW
CIRCUIT
416
WINDOW
OVERLAY
CIRCUIT 305
EXTERNAL DISABLE 262
HORIZ. SYNCH
409
411
VERT. SYNCH
HORIZ. SYNCH
408
410
VERT. SYNCH
SYNCH
SEPARATOR
404
SYNCH
SEPARATOR
406
EXTERNAL CLOCK 280
310
235
235
310

Fig. 6

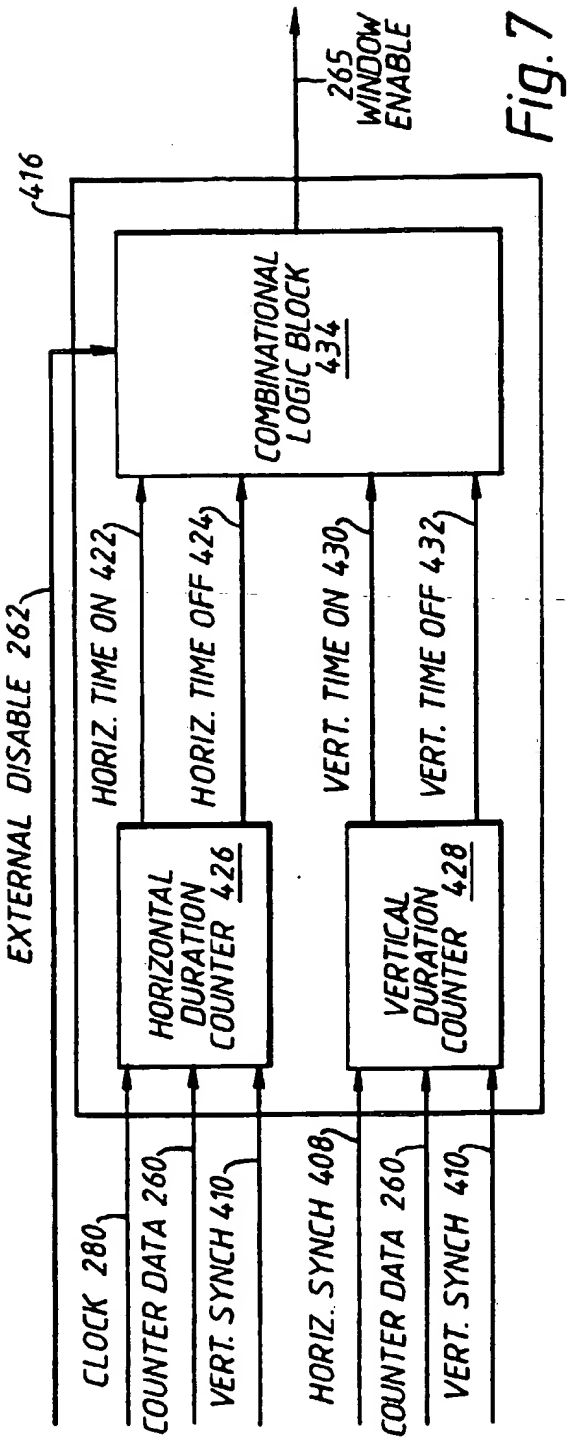
416
EXTERNAL DISABLE 262
CLOCK 280
COUNTER DATA 260
VERT. SYNCH 410
HORIZ. SYNCH 408
COUNTER DATA 260
VERT. SYNCH 410
HORIZONTAL DURATION COUNTER 426
VERTICAL DURATION COUNTER 428
HORIZ. TIME ON 422
HORIZ. TIME OFF 424
VERT. TIME ON 430
VERT. TIME OFF 432
COMBINATIONAL LOGIC BLOCK 434
265 WINDOW ENABLE

Fig. 7

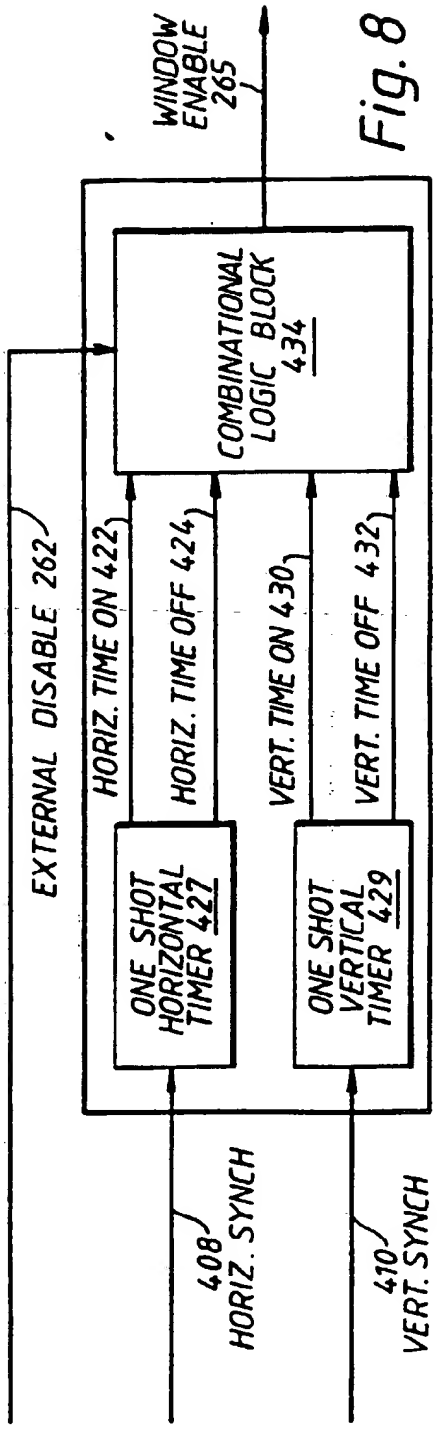
EXTERNAL DISABLE 262
ONE SHOT HORIZONTAL TIMER 427
ONE SHOT VERTICAL TIMER 429
HORIZ. TIME ON 422
HORIZ. TIME OFF 424
VERT. TIME ON 430
VERT. TIME OFF 432
COMBINATIONAL LOGIC BLOCK 434
WINDOW ENABLE 265
408 HORIZ. SYNCH
410 VERT. SYNCH

Fig. 8

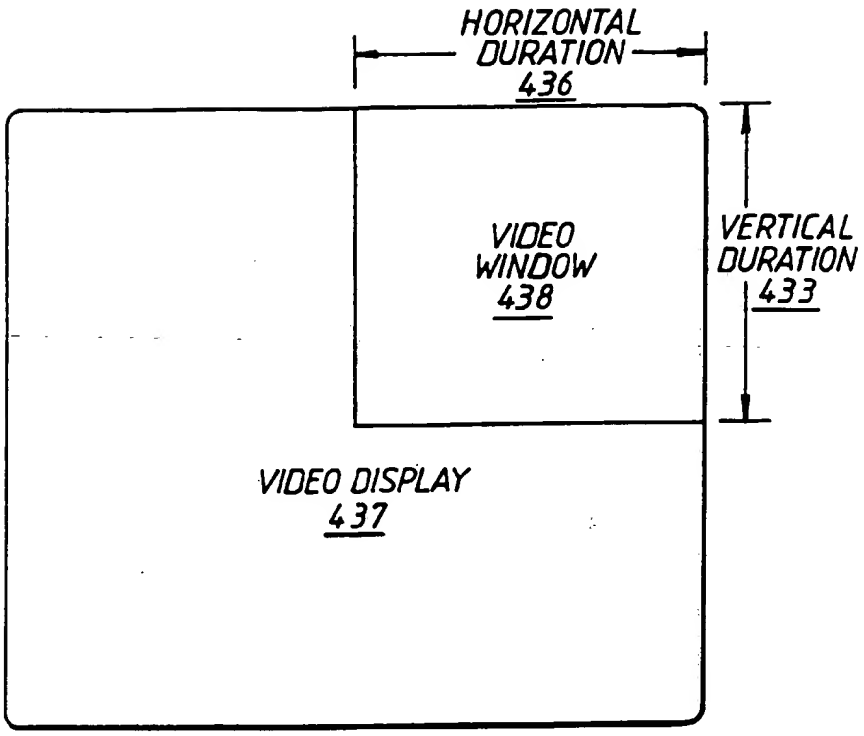
HORIZONTAL
DURATION
436
VIDEO
WINDOW
438
VERTICAL
DURATION
433
VIDEO DISPLAY
437

Fig. 9